ACE Technology

ACE2303

P-Channel Enhancement Mode MOSFET

Description

The ACE2303 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and Battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

Features

- -30V/-2.6A, $R_{DS(ON)}$=130mΩ@V_{GS}=-10V
- -30V/-2.0A, $R_{DS(ON)}$=180mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

Application

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

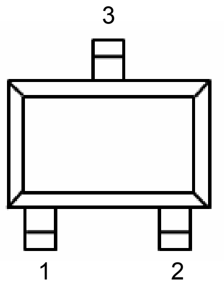
Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

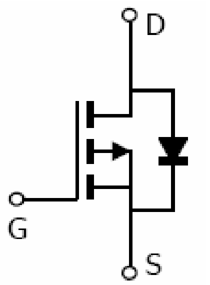
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (T_J=150℃)	T_A=25℃	I_D	-3.0	A
	T_A=70℃		-2.0	
Pulsed Drain Current		I_{DM}	-10	A
Continuous Source Current (Diode Conduction)		I_S	-1.25	A
Power Dissipation	T_A=25℃	P_D	1.25	W
	T_A=70℃		0.8	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	100	℃/W

Packaging Type

SOT-23-3



Pin	Description
1	Gate
2	Source
3	Drain



Ordering information

Selection Guide

ACE2303 XX +

Pb - free

BM: SOT-23-3

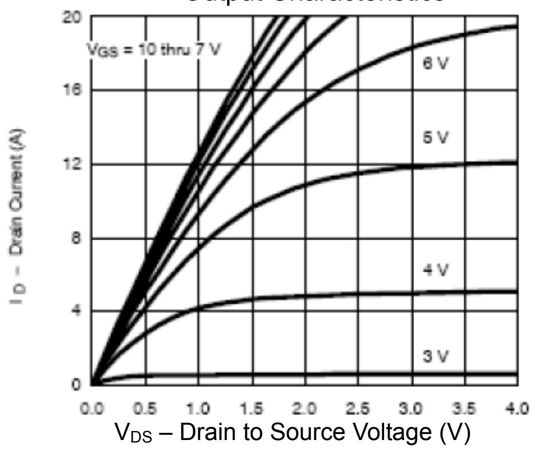
Electrical Characteristics

(T_A=25℃, Unless otherwise noted)

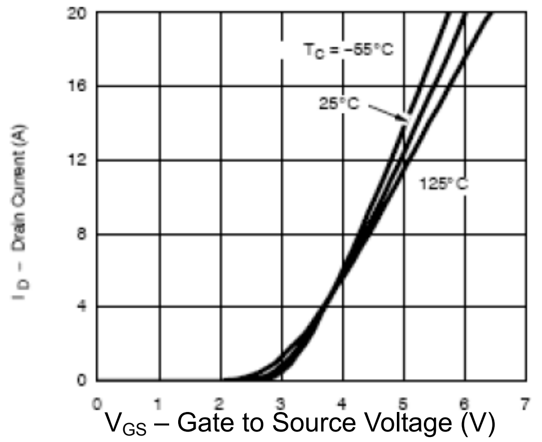
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-10uA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-1.0		-3.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0.V, V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	uA
		V_{DS}=-30V, V_{GS}=0V T_J=55℃			-10	
On-State Drain Current	$I_{D(ON)}$	V_{DS}≦-5V, V_{GS}=-10V	-6			A
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-2.6A		0.095	0.130	Ω
		V_{GS}=-4.5V, I_D=-2.0A		0.125	0.180	
Forward Transconductance	gfs	V_{DS}=-10V, I_D=-1.7A		2.4		S
Diode Forward Voltage	V_{SD}	I_S=-1.25A, V_{GS}=0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-15V, V_{GS}=-10V, I_D≡-1.7A		5.8	10	nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		226		pF
Output Capacitance	C_{oss}			87		
Reverse Transfer Capacitance	C_{rss}			19		
Turn-On Time	$t_{d(on)}$	V_{DD}=-15V, R_L=15Ω I_D≡-1.0A, V_{GEN}=-10V R_G=6Ω		9	20	ns
	t_r			9	20	
Turn-Off Time	$t_{d(off)}$			18	35	
	t_f			6	20	

Typical Characteristics

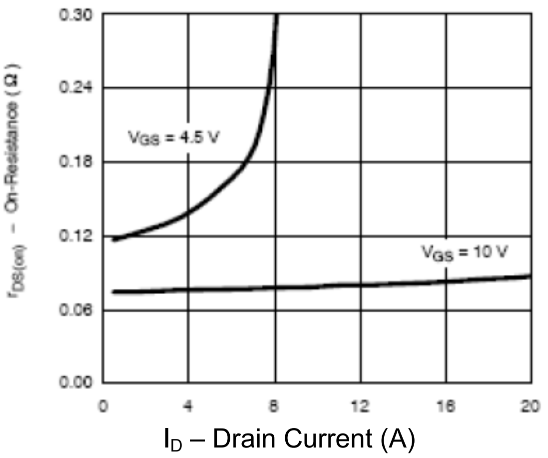
Output Characteristics



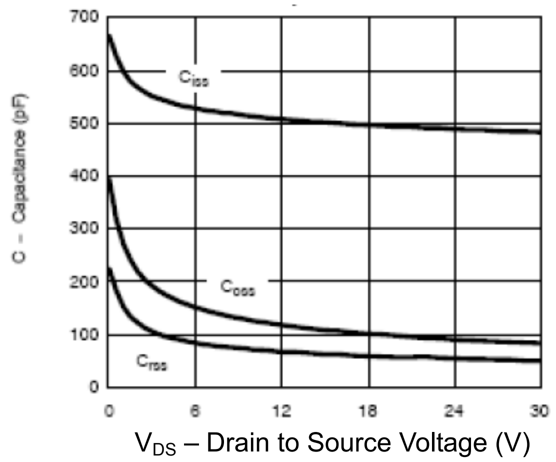
Transfer Characteristics



On-Resistance vs. Drain Current

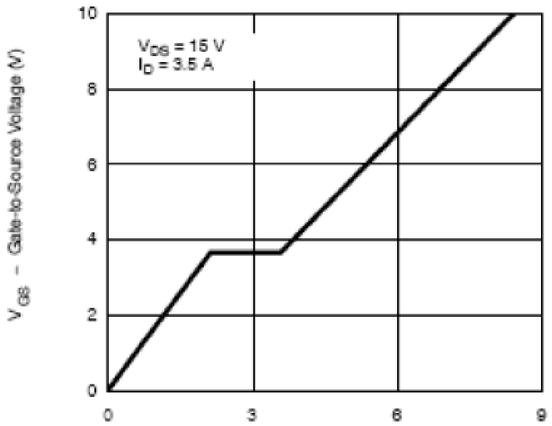


Capacitance



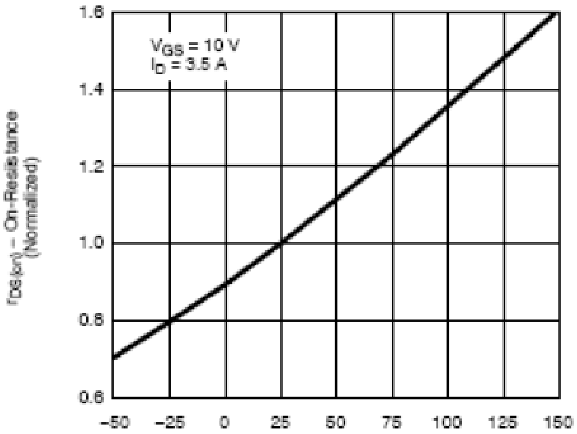
Typical Characteristics

Gate Charge



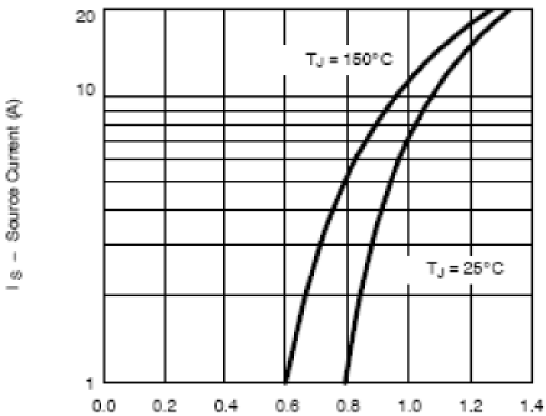
Oq Total Gate Charge (nC)

On-Resistance vs. Junction Temperature



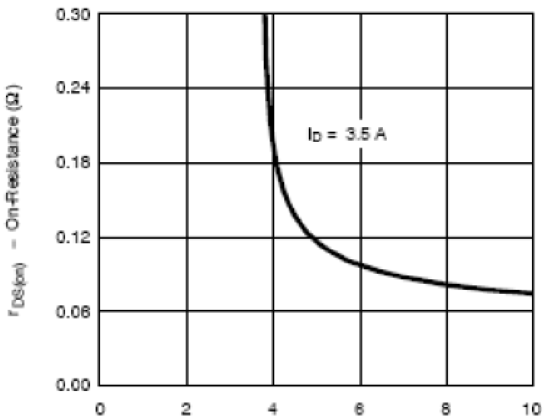
T_J – Junction Temperature (℃)

Source-Drain Diode Forward Voltage



V_{SD} Source to Drain Voltage (V)

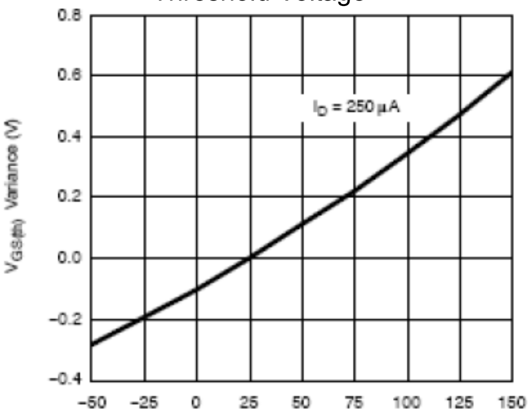
On-Resistance vs. Gate-to-Source Voltage



V_{GS} – Gate to Source Voltage (V)

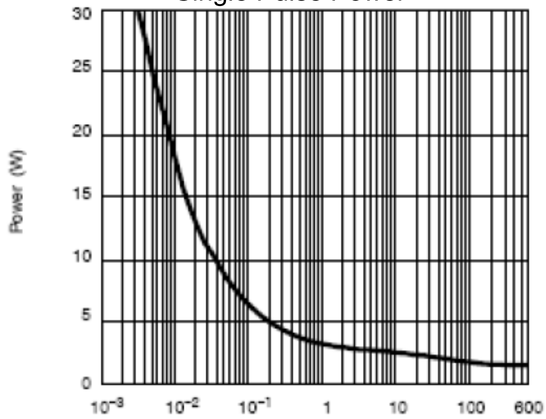
Typical Characteristics

Threshold Voltage



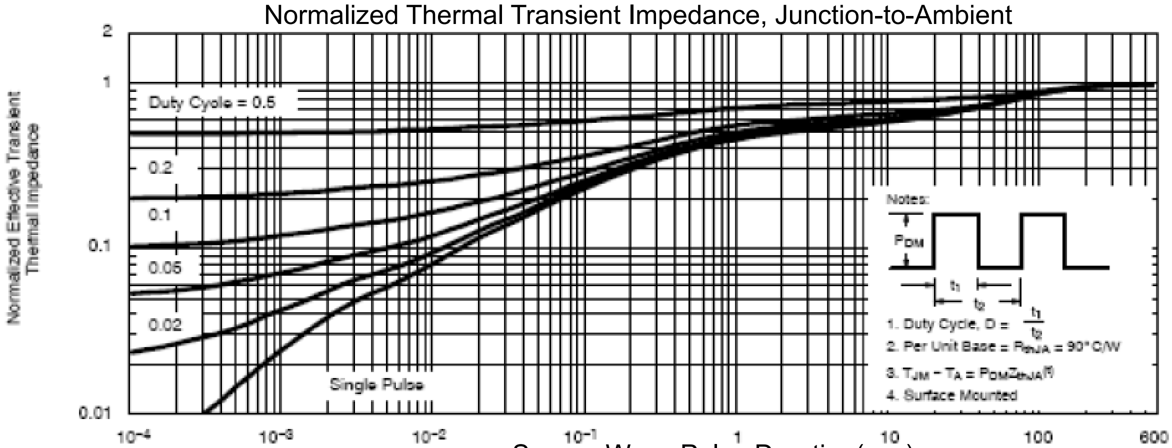
T_J – Temperature

Single Pulse Power



Time(sec)

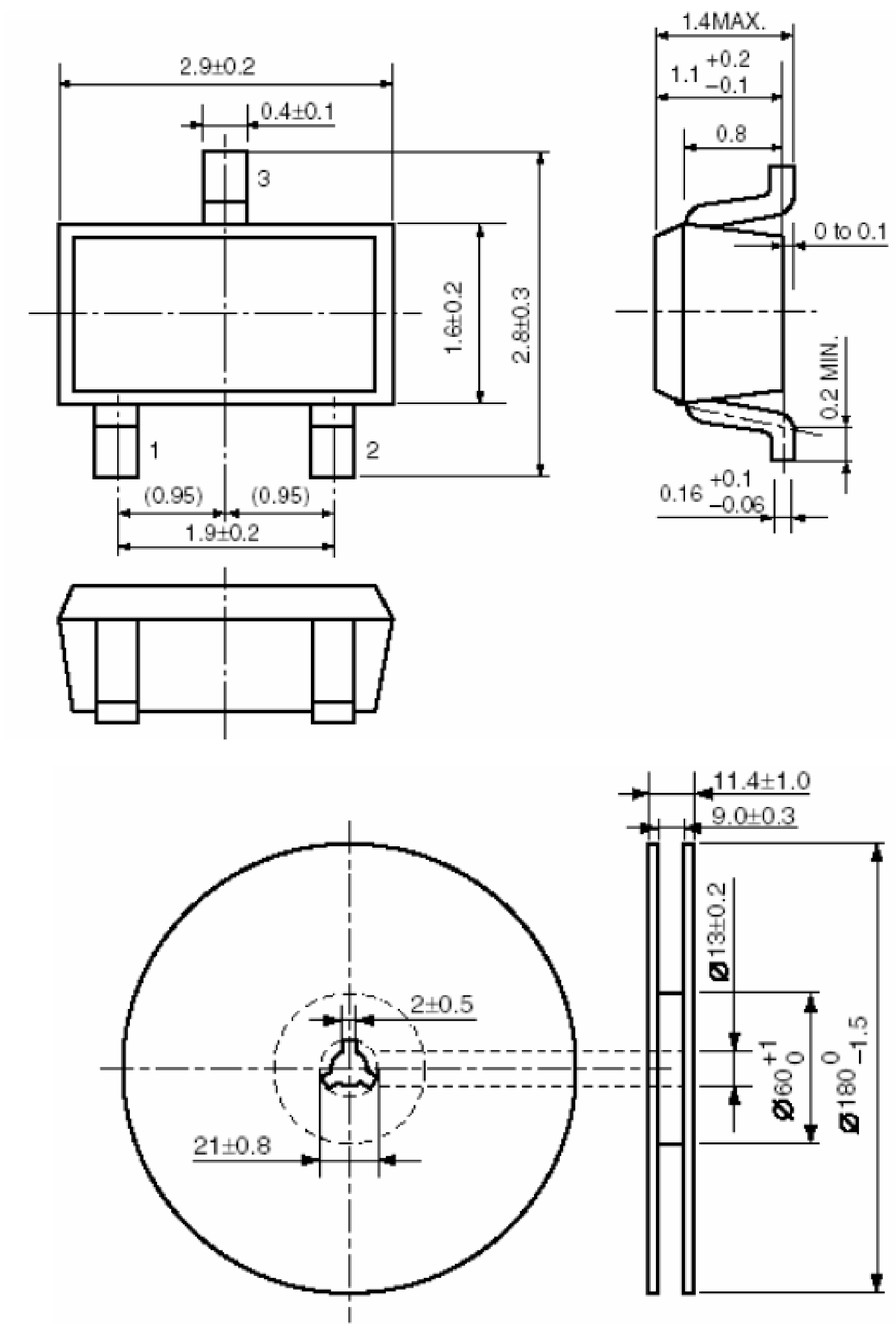
Normalized Thermal Transient Impedance, Junction-to-Ambient



Square Wave Pulse Duration(sec)

Packing Information

SOT-23-3



Notes

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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